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First Experiences in the Bachelor/Master Program “Biomedical Engineering” with the Advanced Program “Radiological Techniques and Radiation Protection”

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Introduction

In 2005, a new Bachelor/Master program in Biomedical Engineering at Ilmenau University of Technology was introduced. The Master course was realized 3 times by now.

Methods

The Bachelor program “Biomedical Engineering” includes the basics like mathematics, physics, mechanical and electrical engineering subjects as well as medical subjects and electives. The Bachelor program ends with an industrial or research internship outside the University and the Bachelor Thesis after 7 semesters. Around 70-80 % of our Bachelor students join the consecutive Master program. There they have the opportunity to choose one or two specializations out of the fields Ophthalmology, Radiological Techniques, Bioelectromagnetism, Assistance Systems and Electrical Systems. The Master program ends after 3 semesters with the Thesis.

Results

In the last 3 years the number of students in the Master program increased from 25 to 55. The advanced program “Radiological Techniques und Radiation Protection” was chosen by 8-12 students every year. The lectures include Image Processing, Imaging Systems in Medicine, Basics of Radiation Protection, Radiation Protection in Medicine, and Radiation Treatment and Treatment Planning. To deepen the theoretical knowledge practical training at our in house labs complements the lectures. The training takes place in an X-Ray lab with projection radiography and 3 generations of imaging systems: X-Ray film, imaging plate and a modern flat panel detector. Additionally, an experimental computer tomography system is used. In a second lab, the students work with radioactive material and modern measurement systems for radiation. The modernisation of the labs was realized through the Strahlenschutzseminar Thüringen e.V. The first and second Master semester end with an excursion to clinical partners and manufacturers of imaging systems.

Conclusion

The evaluation feedback of the students and the feedback of clinical and industrial partners show the success of our education concept.